
	Division of Environmental Health and Communicable Disease Prevention	
	Section: 4.0 Diseases and Conditions	Updated 7/03
	Subsection: Cyclosporiasis	Page 1 of 9

Cyclosporiasis Table of Contents

[Cyclosporiasis](#)

[Fact Sheet](#)

[“Record of Investigation of Enteric Illness” \(CD-2C – rev. 6/02\)](#)

	Division of Environmental Health and Communicable Disease Prevention	
	Section: 4.0 Diseases and Conditions	Updated 7/03
	Subsection: Cyclosporiasis	Page 2 of 9

Cyclosporiasis

Overview ^(1,2)

For a more complete description of cyclosporiasis (*Cyclospora* infection), refer to the following texts:

- Control of Communicable Diseases Manual (CCDM)
- Red Book, Report of the Committee on Infectious Diseases

Case Definition ⁽³⁾

Adopted September 1996

Clinical description

An illness of variable severity caused by the protozoan *Cyclospora cayetanensis* and commonly characterized by watery diarrhea, loss of appetite, weight loss, abdominal bloating and cramping, increased flatus, nausea, fatigue, and low-grade fever. Vomiting also may be noted. Relapses and asymptomatic infections can occur.

Laboratory criteria for diagnosis

Demonstration of *Cyclospora* oocysts (by morphologic criteria or by demonstration of sporulation) or *Cyclospora* DNA (by polymerase chain reaction) in stool, duodenal/jejunal aspirates or small-bowel biopsy specimens

Case classification

Confirmed: a case that is laboratory confirmed

Probable: a clinically compatible case that is epidemiologically linked to a confirmed case

Comment

Direct person-to-person transmission is unlikely because *Cyclospora* oocysts are not infectious at the time of excretion.

Information Needed for Investigation

Verify the diagnosis. What laboratory tests were conducted and what were the results?

When investigating gastrointestinal illness of unknown etiology, see the Outbreak Investigation, Acute Gastroenteritis section.


Establish the extent of illness. Determine if household or other close contacts are, or have been, ill by contacting the health care provider, patient, or family member.

Contact the Regional Communicable Disease Coordinator, if individual cases have not traveled outside of the United States or Canada, or if an outbreak is suspected.

Contact the Bureau of Child Care. If a case is associated with a child care center.

Case/contact Follow Up and Control Measures

Determine the source of infection to prevent other cases:

	Division of Environmental Health and Communicable Disease Prevention	
	Section: 4.0 Diseases and Conditions	Updated 7/03
	Subsection: Cyclosporiasis	Page 3 of 9


- Has the case traveled out of the country to an endemic area?
- Had the case consumed imported fruits or vegetables up to 2 weeks prior to becoming ill?
- Have there been other cases linked by time, place, or person?

Control Measures

See the *Cyclospora* section of the Control of Communicable Diseases Manual (CCDM).
See the *Cyclospora* section of the Red Book.

General

- Identify symptomatic associates of the index case and obtain stool specimen. Be sure to inform the laboratory to test for *Cyclospora*. If the first stool is negative by microscopic examination then two additional specimens should be submitted, collected 2-3 days apart.⁵ Positive cases should be interviewed and referred for medical assessment.
- Direct person-to-person transmission is unlikely because *Cyclospora* oocysts are not infectious at the time of excretion.⁴
- The recommended treatment for cyclosporiasis is a combination of two antibiotics, trimethoprim-sulfamethoxazole (TMP-SMX). TMP-SMX is approved by the FDA, but considered experimental for this purpose.⁵
- If the case is a food handler, the case may return to work when their diarrhea resolves.
- Transmission appears to be primarily waterborne, and occurs through drinking or swimming in contaminated water. Collect patient history on the consumption of water, especially untreated (e.g. private wells, cisterns, etc.) and exposures to recreational waters (e.g. lakes, streams, ponds).¹
- If cases are associated with a public water supply, notify the Regional communicable disease coordinator, who will notify the Department of Natural Resources (DNR). If possible, DNR should be contacted before the collection of any public water samples.
- If coliform bacteria are detected in a private water supply (e.g. cistern, well), advise the family to boil the water (bring water to a full rolling boil for one minute) used for drinking, food preparation, dishwashing, and tooth brushing until the problem in the water supply can be corrected.
- Several outbreaks have been linked to contaminated food, especially imported produce. If food is suspected to be the source of the illness, collect a food history for the 14 days prior to onset of the illness.¹ If fresh fruits or vegetables are suspected as the vehicle in an outbreak, trace back of the product may prevent additional cases.

	Division of Environmental Health and Communicable Disease Prevention	
	Section: 4.0 Diseases and Conditions	Updated 7/03
	Subsection: Cyclosporiasis	Page 4 of 9

Laboratory Procedures

Specimens:

Microscopic examination for oocysts:

1. Collect fecal specimens using an ova and parasite (O&P) kit, which contains two different preservatives, polyvinyl (PVA) and formalin. Specimens must be placed in both preservatives and shipped at room temperature. The Missouri State Public Health Laboratory (SPHL) performs this test. The sender **must** specifically request testing for *Cyclospora* on the specimen submission form. Initial specimens should also be screened for *Cryptosporidium parvum* and *Giardia lamblia*. The same specimen can be used for both tests.
2. If a large number of samples will be submitted (+15), or if sampling will continue over a long period, contact the Regional Communicable Disease Coordinator so arrangements may be made with the laboratory.
3. Before any specimens are submitted as part of a food or water-borne disease outbreak, contact the Regional Communicable Disease Coordinator so arrangements may be made with the SPHL.

Polymerase (PCR) testing or demonstration of sporulation:

The SPHL does not perform PCR testing or sporulation assays of stool specimen for *Cyclospora*; however, some commercial laboratories and CDC may offer this service. Specimens for PCR testing may be frozen without fixation or fixed in 2.5% potassium dichromate. Sporulation assays require that the stool specimen to be fixed in 2.5% potassium dichromate.


Reporting Requirements

Cyclosporiasis is a Category II disease and shall be reported to the local health authority or the Missouri Department of Health and Senior Services within 3 days of suspected diagnosis.

1. For confirmed and probable cases, complete a “Disease Case Report” (CD-1) and a “Record of Investigation of Enteric Infection” (CD-2C) revised 6/02.
2. Entry of the completed CD-1 into the MOHSIS database negates the need for the paper CD-1 to be forwarded to the Regional Health Office.
3. Send the completed secondary investigation form to the Regional Health Office.
4. All outbreaks or “suspected” outbreaks must be reported as soon as possible (by phone, fax, or e-mail) to the Regional Communicable Disease Coordinator. This can be accomplished by completing the Missouri Outbreak Surveillance Report (CD-51).
5. Within 90 days from the conclusion of an outbreak, submit the final outbreak report to the Regional Communicable Disease Coordinator.

References

1. Chin, James, ed. “Diarrhea caused by Cyclospora.” Control of Communicable Diseases Manual, 17th ed. Washington, D.C.: APHA, 2000: 137-138.

	Division of Environmental Health and Communicable Disease Prevention	
	Section: 4.0 Diseases and Conditions	Updated 7/03
	Subsection: Cyclosporiasis	Page 5 of 9

2. American Academy of Pediatrics. "Cyclospora Infections." In: Pickering, LK, ed. 2000 Red Book: Report of the Committee on Infectious Diseases. 25th ed. Elk Grove Village, IL. 2000: 226.
3. Centers for Disease Control. Case Definitions for Infectious Conditions Under Public Health Surveillance. MMWR 1997; 46 (RR-10): 45.
4. Mandell, GL, Bennett, JE, and Dolin, R. ed. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases, 5th ed. New York: Churchill Livingstone, 2000: 2917-2918.
5. CDC PDX-Lab Assistance *Cyclospora* Infection
<http://www.dpd.cdc.gov/dpdx/HTML/Cyclosporiasis.htm> (25 July 2003)

Other Sources of Information

1. Centers for Disease Control and Prevention. Update: Outbreaks of *Cyclospora cayetanensis* Infection -- United States and Canada, 1996 MMWR (July 19, 1996 / 45(28);611-612)
2. Centers for Disease Control and Prevention. Outbreak of Cyclosporiasis -- Ontario, Canada, May 1998. MMWR (October 02, 1998 / 47(38); 806-9)
3. Centers for Disease Control and Prevention. Outbreaks of Cyclosporiasis--United States, 1997. MMWR (May 30, 1997/Vol. 46/No. 21)

Web Sites

1. CDC *Cyclospora* infection fact sheet
http://www.cdc.gov/ncidod/dpd/parasites/cyclospora/factsht_cyclospora.htm (25 July 2003)
2. CDC *Cyclospora* infection healthcare provider information
http://www.cdc.gov/ncidod/dpd/parasites/cyclospora/healthcare_cyclospora.htm (25 July 2003)
3. William H Shoff & Behrman, AJ, "Cyclospora" eMedicine Journal, September 10, 2001, V 2, N 9
<http://www.emedicine.com/MED/topic3393.htm> (25 July 2003)

Cyclosporiasis

FACT SHEET

What is *Cyclospora*?

Cyclospora cayetanensis (SIGH-clo-SPORE-uh KYE-uh-tuh-NEN-sis) is a one-celled parasite. The first known human cases of illness caused by *Cyclospora* infection (i.e., cyclosporiasis) were reported in 1979. In the last several years, outbreaks of cyclosporiasis have been reported in the United States.

How is *Cyclospora* spread?

People ingesting water or food that was contaminated with infected stool may contract this disease. Outbreaks of cyclosporiasis have been linked to consumption of imported fresh produce and drinking water contaminated by sewage. It is unlikely that *Cyclospora* is passed directly from one person to another because *Cyclospora* is not immediately infectious after it leaves the body.

Who is at risk for infection?

In the past, *Cyclospora* infection was usually found in people who lived or traveled in developing countries. However, imported contaminated produce and sewage in the drinking water supply have caused cases of *Cyclospora*.

What are the symptoms of infection?

Cyclospora infects the small intestine and usually causes watery diarrhea, with frequent, sometimes explosive, bowel movements. Other symptoms can include loss of appetite, substantial loss of weight, bloating, increased gas, stomach cramps, nausea, vomiting, muscle aches, low-grade fever, and fatigue. Some people who are infected with *Cyclospora* do not have any symptoms.

How soon after infection will symptoms begin?

The time between becoming infected and becoming sick is usually about 1 week.

How long will symptoms last?

If not treated, the illness may last from a few days to a month or longer. Symptoms may seem to go away and then return.

What should I do if I think I may be infected?

See your health care provider. People who have diarrhea should rest and drink plenty of fluids.

How is *Cyclospora* infection diagnosed?

Your health care provider will ask you to submit stool specimens to see if you are infected. Since testing for *Cyclospora* infection can be difficult, you may be asked to submit several stool specimens over several days. Your health care provider should specifically request testing for *Cyclospora*.

How is infection treated?

The recommended treatment for infection with *Cyclospora* is a combination of two antibiotics; TMP-SMX commonly referred to as sulfa. Sulfa drugs are sold under manufacturers' names such as Bactrim*, Septra*, or Cotrim*.

I am allergic to sulfa drugs; is there another drug I can take?

No alternative drugs have been identified yet for people who are unable to take sulfa drugs. See your health care provider for other treatment recommendations.

How is infection prevented?

Avoiding water or food that may be contaminated with sewage will prevent *Cyclospora* infection. Travelers to underdeveloped countries should avoid eating salads, raw vegetables, or fruits that cannot be peeled. Travelers should also avoid drinking or consuming the water from the local public supply and only use bottled water or bottled beverages. Do not use the ice or fountain drinks.

* Represents manufacturers' trade names. (This is provided for your information only and does not imply an endorsement of these antibiotics for treatment of cyclosporiasis by the Missouri Department of Health and Senior Services.)

**Missouri Department of Health and Senior Services
Section for Communicable Disease Prevention
Phone: (866) 628-9891 or (573) 751-6113**



MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES
SECTION OF COMMUNICABLE DISEASE CONTROL AND VETERINARY PUBLIC HEALTH
RECORD OF INVESTIGATION OF ENTERIC ILLNESS

MOHSIS CID#

Information with shaded titles is not required if entered on the CD-1 report or entered into MOHSIS.

NAME: (LAST, FIRST, MI)		DATE OF BIRTH:	AGE:	GENDER:	RACE:
		/ /			
PARENT(S) NAME IF NOT ADULT:		PHONE NO.:			
HOME ADDRESS:	CITY:	STATE:	ZIP CODE:	COUNTY:	

EMPLOYMENT / CHILD CARE (*See reverse side for High-Risk Employment information.)

PLACE OF EMPLOYMENT:	ADDRESS:	PHONE NO.:	
OCCUPATION:	JOB DUTIES:		
SCHOOL / CHILD CARE ATTENDED:	GRADE OR ROOM:		
SCHOOL / CHILD CARE ADDRESS:	CITY:	STATE:	ZIP CODE:

Symptoms:* (Check Yes or No and number the order in which symptoms first presented)

ORDER NO.	SYMPTOM	YES	NO	ORDER NO.	SYMPTOM	YES	NO	ORDER NO.	SYMPTOM	YES	NO
	Nausea	<input type="checkbox"/>	<input type="checkbox"/>		Bloody Diarrhea	<input type="checkbox"/>	<input type="checkbox"/>		Malaise	<input type="checkbox"/>	<input type="checkbox"/>
	Vomiting	<input type="checkbox"/>	<input type="checkbox"/>		Cramps	<input type="checkbox"/>	<input type="checkbox"/>		Headache	<input type="checkbox"/>	<input type="checkbox"/>
	Diarrhea	<input type="checkbox"/>	<input type="checkbox"/>		Chills	<input type="checkbox"/>	<input type="checkbox"/>		Dizziness	<input type="checkbox"/>	<input type="checkbox"/>
	Watery Diarrhea	<input type="checkbox"/>	<input type="checkbox"/>		Fever _____ °	<input type="checkbox"/>	<input type="checkbox"/>		Other		

Disease

DIAGNOSIS:	ONSET DATE / TIME:*	DURATION OF SYMPTOMS:	
	/ / _____ <input type="checkbox"/> am <input type="checkbox"/> pm	_____ hrs.	
INCUBATION PERIOD:*	PHYSICIAN CONSULTED?	DATE:	HOSPITALIZED?
	<input type="checkbox"/> Yes <input type="checkbox"/> No	/ /	<input type="checkbox"/> Yes <input type="checkbox"/> No
PROVIDER NAME:	CITY:	STATE:	PHONE NO.:
TREATMENT: (TYPE, AMOUNT)			DATE:*
			/ /
<input type="checkbox"/> Recovered <input type="checkbox"/> Died	DATE OF DEATH:	CAUSE OF DEATH:	
	/ /		

Patient History (Limit patient responses to within one disease incubation period.)


TRAVEL: (OUTSIDE OF HOME COMMUNITY)	DATE(S):*	LOCATION(S):
<input type="checkbox"/> Yes <input type="checkbox"/> No		
HOME WATER SUPPLY:		
<input type="checkbox"/> Private (type) _____ <input type="checkbox"/> Bottled Water (brand) _____		
<input type="checkbox"/> Public Water District (Name) _____ Other water sources: _____		
HOME SEWAGE DISPOSAL SYSTEM:		
<input type="checkbox"/> Private (type) _____ <input type="checkbox"/> Community System (Name) _____		
RECREATIONAL WATER CONTACT: (SWIMMING POOL, LAKE, RIVER, ETC.)		
<input type="checkbox"/> Yes <input type="checkbox"/> No Type: _____ Location: _____		
Dates: _____		
PET / ANIMAL EXPOSURE: (DOMESTIC PETS, LIVESTOCK, OTHER)		
<input type="checkbox"/> Yes <input type="checkbox"/> No Pets/Animals ill: <input type="checkbox"/> Yes <input type="checkbox"/> No Animal Type(s): _____		
Date(s)* of Animal Exposure: _____		
Describe Animal Exposure: _____		
Location of Animal Exposure: _____		
Comments: _____		

Food**

	NAME	STREET ADDRESS	CITY / STATE
Grocery stores routinely used:	_____	_____	_____
	_____	_____	_____
Restaurants routinely used:	_____	_____	_____
	_____	_____	_____
OTHER FOOD SOURCES: (e.g., ETHNIC, UNPASTEURIZED, HOME CANNED)		TYPE / LOCATION:	

* Epi Calendar (reverse side) may be used to help determine time periods.
** Attach separate 3-day food history if multiple cases are known/suspected.

Please submit this form along with completed CD-1 Report on all enteric cases.

Laboratory Tests*: Record Diagnostic Information in Section 41 of CD-1 Report and/or attach copy of lab slip(s)										
Are there other associated cases? <input type="checkbox"/> Yes <input type="checkbox"/> No					If yes, how many?		How Associated:			
List ill contacts:										
NAME & ADDRESS	DOB / AGE	SEX	RELATION TO PATIENT	SIMILAR ILLNESS		ONSET DATE	LAB CONFIRMED		CD-1 AND ENTERIC FORM COMPLETED	
				YES	NO		YES	NO	YES	NO
				<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High Risk Employment Information (e.g., Food Handler, Child Care or Health Care Worker)										
SPECIFIC JOB DUTIES:*										
DATE(S) WORKED PRIOR TO ONSET OF ILLNESS:*						EXCLUDED FROM WORK? <input type="checkbox"/> Yes <input type="checkbox"/> No		DATE:*/ / /		
IF YES, BY WHOM:					TITLE:					
FOLLOW-UP SPECIMEN(S) REQUIRED? <input type="checkbox"/> Yes <input type="checkbox"/> No		DATE COLLECTED:*/ / /		RESULTS:*/ 1. _____ 2. _____ 3. _____						
LAB:			WERE CONTROL MEASURES DISCUSSED WITH PATIENT? <input type="checkbox"/> Yes <input type="checkbox"/> No				BY:			
RETURNED TO WORK? <input type="checkbox"/> Yes <input type="checkbox"/> No		DATE:*/ / /		EXPECTED DATE:*/ / /			EXCLUDED FROM HIGH-RISK DUTIES? <input type="checkbox"/> Yes <input type="checkbox"/> No			
SEXUAL PREFERENCE: <input type="checkbox"/> Heterosexual <input type="checkbox"/> Homosexual <input type="checkbox"/> Bisexual <input type="checkbox"/> Unknown <input type="checkbox"/> N/A									MULTIPLE PARTNERS? <input type="checkbox"/> Yes <input type="checkbox"/> No	
RECREATIONAL DRUG USE: <input type="checkbox"/> Yes <input type="checkbox"/> No		DRUGS OF CHOICE:								
*Epi Calendar:										
MONTH(S) / DATES:			YEAR:		DISEASE:			WORK:		
Sunday ____	Monday ____	Tuesday ____	Wednesday ____	Thursday ____	Friday ____	Saturday ____				
Sunday ____	Monday ____	Tuesday ____	Wednesday ____	Thursday ____	Friday ____	Saturday ____				
Sunday ____	Monday ____	Tuesday ____	Wednesday ____	Thursday ____	Friday ____	Saturday ____				
OTHER PERTINENT EPIDEMIOLOGICAL DATA (TO INCLUDE PROBABLE SOURCE):										
INVESTIGATOR: 								DATE COMPLETED:		